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PREPARED FOR:**

**OFFICE OF THE
RAIL REGULATOR**

**BENCHMARKING OF
OPERATING EXPENDITURE**

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Executive Summary

The aim of this study is to quantify the relative efficiency (compared against ‘best practice’) of specific business processes comprising Network Rail’s controllable operating expenditure (OPEX) that can be reasonably benchmarked against external peers in other industries. The Office of the Rail Regulator’s (ORR) remit for this study was to:¹

- examine the Network Rail Business Plan of March 2003 to understand cost drivers, business processes and outputs;
- provide a detailed analysis of the components of controllable OPEX against external benchmarks (ie, drawn from outside the rail industry);
- identify the cost savings Network Rail might achieve in future, if it adopts best practice from other industries.

The cost base examined covers controllable OPEX predominantly incurred at HQ, plus some zonal/regional expenditure that covers administrative and support-type functions.² In total, this controllable OPEX figure is budgeted to be £641m in 2003/04, which is around 51% of total OPEX of £1.26 billion (the remaining OPEX elements cover uncontrollable costs and zonal costs such as signalling). Excluding Safety, ‘PLC Adjustments’, and West Coast Route Modernisation (WCRM), the balance of controllable OPEX figure is £342m, and it is this amount that is the focus of this paper.

The analysis in this paper has not involved full discussions with Network Rail on possible reasons for any differences in the comparisons, although some comments provided by Network Rail have influenced this paper. It should therefore be understood that further discussion would be required to gain a more complete understanding of the potential for Network Rail to reduce its costs.

The focus of OXERA’s analysis has been on external benchmarking of business process efficiency and, in particular, using benchmarks external to the rail sector. This method focuses on identifying the major activities of Network Rail, and justifying the relative costs of undertaking these activities with reference to external benchmarks at any point in time.

In addition, where external process benchmarking has not been possible because some activities are specific to the rail industry, internal benchmarking of performance has been used. This approach is useful where there are a number of similar units within Network Rail (eg, Major Stations).

Within the figure of £342m, the largest item is technical expenditure (£115m), which covers the Chief Engineer, Asset Delivery, Supply Chain and Railway Systems. The Technical function is railway-specific; it therefore cannot be externally benchmarked outside the rail industry, neither can it be internally benchmarked. It was not feasible, therefore, to assess the efficiency of this cost area. However, the Technical function is budgeted by Network Rail to fall by 36% by 2005/06. In addition, the benchmarking of Property only relates to Spacia, which manages Network Rail’s commercial property

¹ ORR (2003), ‘The Interim Review of Track Access Charges: Second Consultation Paper—The Incentive and Financial Framework’, February 13th.

² In line with OXERA’s remit, this controllable OPEX figure includes all expenditure for typical centralised administrative and support functions. Where some of this expenditure occurs in the zones/regions, this has been added to HQ expenditure to allow consistent comparisons with external benchmarks.

portfolio; the benchmarking of HR only relates to Core HR, which relates to the functions normally associated with HR (while Corporate HR relates to executives, graduate trainees, payments in respect of staff rail travel facilities, and all staff performance bonus schemes). The table below summarises the costs benchmarked in this study.

Coverage of controllable OPEX, 2003/04 (£'000s)

Function/process	HQ expenditure ¹	Zonal expenditure ²	Total function expenditure	Benchmarking approach applied
Business Development ³	3,378	692	4,070	Not examined
Freight ³	2,200	n/a	2,200	Not examined
Major Stations ³	32,200	n/a	32,200	Internal
National Logistics Unit ^{3, 4}	-13,380	n/a	-13,380	Not examined ⁴
Commercial Services ³	5,101	11,177	16,278	Not examined
PLC Adjustments ³	186,904	n/a	186,904	Not examined
Property (Spacia) ³	16,538	n/a	16,538	External
Property (non-Spacia) ³	13,202	n/a	13,202	Not examined
RT Information Systems ³	60,297	n/a	60,297	External
Safety ³	84,600	23,626	108,226	Not examined
Technical ³	114,738	n/a	114,738	Not examined
WCRM ³	4,129	n/a	4,129	Not examined
Change Manager ⁵	513	n/a	513	External
Corporate Affairs ⁵	7,038	n/a	7,038	External
Finance ⁵	7,829	19,665	27,494	External
HR (Core) ⁵	13,239	847	14,086	External
HR (Corporate) ⁵	38,558	N/a	38,558	Not examined
Legal ⁵	1,576	n/a	1,576	External
Corporate Planning & Regulatory Affairs ⁵	5,872	n/a	5,872	External
Secretariat ⁵	616	n/a	616	External
Total controllable OPEX			641,155	
Total controllable OPEX excl. Safety, PLC Adjustments, and WCRM			341,896	
Proportion of total expenditure covered by:				
Benchmarks			26%	
Benchmarks (excluding Safety, PLC Adjustments, and WCRM)			49%	
Benchmarks (excluding Safety, PLC Adjustments, WCRM and technical)			73%	

Notes: ¹ Includes all staff costs and 'other production and management' costs at HQ level. ² Includes all staff costs and other production and management costs in the zones/regions directly attributable to a specific function/process. ³ Central business unit or corporate (plc) business unit. ⁴ Negative values refer to net revenues in the business unit or function and as such are not benchmarked. ⁵ HQ service function.

Source: Network Rail Business Plan (2003) and OXERA analysis.

The main benchmark categories used in this study are described below.

- *HQ departments*—with regard to external quantitative benchmarks, the most straightforward area on which to find information is the HQ administrative function for which there are widespread analogues (eg, Finance, HR and IT).
- *Utility benchmarks*—a second category of processes concerns those with activities that are not widespread, but are nonetheless typical of utilities in the UK (eg, legal and regulatory activities). In these cases, OXERA has drawn on benchmarking work undertaken in other UK utilities to provide evidence of the appropriate level of Network Rail's costs.
- *Cross-sector benchmarks*—a third category concerns processes with analogues in other industries (eg, property). In this area some previous benchmarking studies have been used.
- *Internal benchmarks*—although the focus of this study has been benchmarking outside the rail sector, this is not possible for rail-specific functions. For Major Stations, some internal benchmarking between the stations has been undertaken.

Based on these comparisons, Network Rail's relative efficiency in each of the functions is summarised below.

Network Rail's overall performance, 2003/04

Function/business units	OPEX (£'000s)	Inefficiency score	Efficient costs
RT Information Systems	60,297	0.92	55,569
HR ¹	14,086	0.50	7,060
Finance	27,494	1.00 ²	27,494
Corporate Affairs	7,038	1.00 ²	7,038
Legal and Secretariat	2,192	0.46	1,012
Corporate Planning and Regulatory Affairs ³	6,385	0.77	4,893
Major Stations	32,200	0.80	25,760
Property ⁴	16,538	0.56	9,261
Total benchmarked OPEX⁵	166,230		
Total efficient OPEX			138,087
Aggregate inefficiency			17%

Notes: ¹ The benchmarking covers Core HR only, not the entire HR function (the total HR function OPEX figure is £52,644). ² Finance costs and Corporate Affairs costs are estimated as being efficient. ³ Including Change Manager. ⁴ The benchmarking covers Spacia only, not the entire Property function (the total Property function OPEX figure is £29,740). ⁵ Excludes property costs outside Spacia and excludes HR corporate costs.

Source: Network Rail Business Plan (2003) and OXERA analysis.

Overall, Network Rail's controllable OPEX appears to be around 17% greater than the efficient level in the areas covered by the benchmarks. At the functional level, Network Rail appears to be:

- inefficient in six functions (IT, HR, Legal, Corporate Planning and Regulatory Affairs, Property and Major Stations); and
- efficient in one function (Corporate Affairs).

For the remaining function (Finance), the picture is unclear due to inconsistency in the results of using a staff-based benchmark compared with a cost-based benchmark.

A further consideration is the possibility of inefficiency in Network Rail's total cost base, as the benchmarking undertaken in this study depends on a comparison of the functions as a *proportion* of the total cost or employee base. Thus, the results may show Network Rail to be relatively efficient in terms of the size of its HQ compared with its total activity levels—ie, it has the correct mix of these activities, even if it is inefficient in an *absolute* sense. For this reason, the measured efficiency of any single function will be affected by the efficiency of other functions by their impact on total expenditure or headcount.

The ORR has informed OXERA that Network Rail has been assessed as being 12–20% inefficient in zonal OPEX. If Network Rail were to achieve a 15% cost reduction in this area (ie, slightly below the average of this range), its overall operating cost base would fall by around 4%. This reduction would affect its performance on the functional ratios considered above. Taking this into account would suggest that Network Rail could be around 18% inefficient in the benchmarked processes.

However, it should be recognised that this figure potentially underestimates Network Rail's inefficiency as the inefficiencies in other functions have been underestimated due to staff and costs within Corporate HR not being reallocated to their appropriate functions. As such, OXERA considers that a central estimate of Network Rail's inefficiency in those areas examined in this report ranges from 18% to 20%.

The next stage will necessitate entering into discussions with Network Rail, the ORR and the SRA in order to:

- develop a greater understanding of the gaps in the benchmarking analysis and the potential reasons for these gaps;
- examine the achievability and timeframe for these suggested cost reductions (for example, using qualitative benchmarks).

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1. Introduction

As part of Network Rail's Interim Review, the ORR is required to assess an efficient level of costs for the company to undertake its activities. The ORR has commissioned several studies to determine this cost level and the speed with which Network Rail can remedy any inefficiency. This paper represents the results of the process benchmarking workstream of Network Rail's controllable operating expenditure (OPEX) that can be reasonably benchmarked against peers in other industries, based on:

- Network Rail's forecast OPEX and headcount, as set out in its March 2003 Business Plan for the years 2003/04, 2004/05 and 2005/06;
- 2002/03 actual operating costs and headcount;
- 2001/02 actual operating costs and headcount. The data is taken from Railtrack's CP2 Business Plan published at the time of the last periodic review.³ Additional data submissions have been included from Network Rail.⁴

The structure of this paper is as follows:

- section 2 gives a detailed overview of the benchmarking framework adopted;
- section 3 summarises specific data issues;
- section 4 presents the detailed results of the external benchmarking analysis by function;
- section 5 considers the impact of possible inefficiency in Network Rail's total operating cost base;
- section 6 concludes.

³ Railtrack (2002), '2002 CP2 Business Plan for Railtrack PLC (in Railway Administration)'.

⁴ In support of OXERA's analysis, Network Rail has made available its management accounts.

2. Overview of Benchmarking Framework

2.1 Aims and objectives

The aim of the process benchmarking workstream is to identify efficiency improvement opportunities in specific business processes. A separate matter is the rate at which any efficiency gap may be closed—if the efficiency gap is large, this may be a significant issue; however, this is not addressed in this study.

The business processes included in this analysis are those defined as controllable OPEX, which can be reasonably compared against benchmarks from other industries. This includes, predominantly, expenditure incurred at HQ level, together with some zonal/regional expenditure.⁵ In total, this controllable OPEX figure is budgeted to be £641m in 2003/04, which constitutes 51% of total OPEX (£1.26 billion), including uncontrollable OPEX and other zonal OPEX, such as signalling⁶. Of this, £342m represents controllable OPEX, excluding Safety, PLC Adjustments, and WCRM, and it is this amount that is the focus of this paper. Table 2.1 below gives a breakdown of HQ controllable OPEX.

While £342m may appear to be a relatively small proportion of Network Rail's overall cost base, the absolute value of these costs is significant. For example, Network Rail's controllable OPEX is still greater than equivalent costs for individual UK electricity distribution network operators or individual water and sewerage companies.

Three basic approaches to assessing the appropriate level of Network Rail's expenditure are possible.

- *'External' benchmarking of business process efficiency*—focusing on identifying the major activities of Network Rail, and justifying the costs of undertaking these processes relative to external benchmarks at any point in time.⁷ This method has the advantage that an expenditure review can be undertaken at a *chosen* level of detail, provided detailed comparable external benchmarks are available. Where possible, external benchmarks have been applied to the processes comprising controllable OPEX. Specific external benchmarks used are discussed in detail in section 4.
- *'Internal' benchmarking of performance between similar units within the organisation*—some activities within Network Rail are specific to the rail industry. These areas cannot therefore be benchmarked using external benchmarks from outside the industry. A separate workstream has been undertaken by other consultants to examine international benchmarking of rail companies. However, within this study, some internal benchmarking has been carried out between Major Stations.

⁵ In line with OXERA's remit, this controllable OPEX figure includes all the expenditure for typical centralised administrative and support functions. Where some of this expenditure occurs in the zones/regions, this has been added to HQ expenditure to allow consistent comparisons with external benchmarks.

⁶ Including depreciation increases this figure to £1.69 billion. This is Network Rail's total operating cost base used in constructing cost-based benchmarking ratios.

⁷ OXERA's remit has been to identify appropriate benchmarks for Network Rail outside the rail sector.

- *‘Internal’ benchmarking of historical performance over time*—changes over time in past expenditure relative to a historical benchmark may provide some useful benchmarking information (particularly where comparable external benchmarks are not available). Supplementing trends in process-specific expenditure with analyses of developments in the external environment and productivity changes helps to determine the appropriate level of current or expected future expenditure. The main advantage of this approach is that only incremental changes need to be considered in detail, as opposed to examining the entire expenditure. This approach is relevant to those areas of Network Rail’s OPEX that have not had significant organisational changes over time, or where such changes can be documented.

During the benchmarking, OXERA has collected external benchmarks, while Network Rail has provided a commentary on historical trends in cost, which OXERA has examined and drawn upon.

Table 2.1 summarises the coverage of total controllable OPEX excluding certain zonal costs (£641m) by both external and internal benchmarking approaches. A number of cost areas were agreed with the ORR and Network Rail to be outside the scope of the process benchmarking, namely Safety, WCRM and PLC Adjustments:

- *Safety*—ensuring compliance with safety regulations is an important overall cost item for Network Rail. However, differences in industry circumstances meant that external benchmarking of safety costs was beyond the scope of this exercise;
- *WCRM*—the Regulator is undertaking a separate, extensive analysis of the costs of the WCRM;
- *PLC Adjustments*—this cost element is a financial adjustment and cannot be externally benchmarked. However, some discussion of this cost area is provided.

Removing these items leaves a total controllable OPEX figure of £342m, of which £166m has been benchmarked—the largest elements excluded from the benchmarking are Technical, non-Spacia Property, and Corporate HR.⁸

⁸ The Technical function is railway-specific; it therefore cannot be externally benchmarked outside the rail industry, neither can it be internally benchmarked. However, the Technical function is budgeted by Network Rail to fall by 36% by 2005/06. Spacia manages the commercial property portfolio. Corporate HR relates to executives, graduate trainees, payments in respect of staff rail travel facilities, and all staff performance bonus schemes.

Table 2.1: Benchmarking methods used and coverage of controllable OPEX, 2003/04 (£'000s)

Function/process	HQ expenditure ¹	Zonal expenditure ²	Total function expenditure	Benchmarking approach applied
Business Development ³	3,378	692	4,070	Not examined
Freight ³	2,200	n/a	2,200	Not examined
Major Stations ³	32,200	n/a	32,200	Internal
National Logistics Unit ^{3, 4}	-13,380	n/a	-13,380	Not examined ⁴
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Corporate Planning & Regulatory Affairs ⁵	5,872	n/a	5,872	External
Secretariat ⁵	616	n/a	616	External
Total controllable OPEX			641,155	
Total controllable OPEX excl. Safety, PLC Adjustments, and WCRM			341,896	
Proportion of total expenditure covered by:				
Benchmarks			26%	
Benchmarks (excluding Safety, PLC Adjustments, and WCRM)			49%	
Benchmarks (excluding Safety, PLC Adjustments, WCRM and technical)			73%	

Notes: ¹ Includes all staff costs and 'other production and management' costs at HQ level. ² Includes all staff costs and other production and management costs in the zones/regions directly attributable to a specific function/process. ³ Central business unit or corporate (plc) business unit. ⁴ Negative values refer to net revenues in the business unit or function and as such are not benchmarked. ⁵ HQ service function.

Source: Network Rail Business Plan (2003) and OXERA analysis.

Table 2.1 includes the functions contained within OXERA's remit for the process benchmarking workstream. Where some functional expenditure occurs in the zones/regions (as indicated in the third column), this has been added to HQ expenditure to allow consistent comparisons with external benchmarks.

The specific objectives of the process benchmarking analyses were to:

- identify business processes, reflecting, where possible, the cost-centre structure of the business;

- calculate the unit costs of these processes, having first defined the relevant units and cost drivers;
- identify similar processes from other industries;
- use benchmarks to provide comparisons of the unit costs of these processes in order to assess efficient cost levels for Network Rail.

Each of these objectives is discussed in turn below.

2.2 Identifying business processes

The work has focused on benchmarking the central business units and individual HQ service functions. Broadly, these business units and functions match the processes generally regarded as ‘HQ functions’—ie, the centralised administrative and support processes (eg, HR, Finance, and IT). In Network Rail, some expenditure related to these ‘HQ functions’ is, in fact, incurred in the zones/regions. Where possible, this zonal/regional expenditure has been attributed to the appropriate central business unit or HQ service function to obtain a total ‘business process’ cost estimate. This has been done to allow consistent comparisons with external benchmarks. Table 2.1 above shows the total business process expenditure at HQ level and in the zones/regions.

2.3 Calculating unit costs of business processes

The focus of OXERA’s process benchmarking work has been to examine external, quantitative benchmarks from outside the rail sector. As far as possible, benchmarks have been used that have consistent definitions. All Network Rail cost-based benchmarks are computed for 2003/04 (as this represents the first year of the March 2003 Business Plan). Comparisons are also provided for previous years’ actual figures for headcount comparisons.

A critical issue for the benchmark comparisons is the definition of the denominator used to construct these comparisons (for both the headcount and the cost-based benchmarks). There appears to be more uncertainty over the exact definition of the cost denominator than the total staff numbers. Thus, the focus has been to use the staff-related benchmarks, where possible. Such comparisons cover the majority of the functions examined.

However, some external benchmarks are only available on a cost basis—namely Legal, and Corporate Planning and Regulatory Affairs (CPRA) (and potentially Finance). For these two (relatively small) cost areas, comparisons with National Grid Company (NGC) have been used. During the price-control review of Transco, Arthur Andersen considered NGC as a suitable comparator for some of Transco’s OPEX-incurring functions and thus used some of NGC’s operating ratios as benchmarks.⁹ Most of the ratios devised used full-time equivalents (FTEs) for the denominator, although some made use of total OPEX of £475m, which relates to OPEX prior to the inclusion of transmission services for the financial year 2000/01. This OPEX figure includes controllable OPEX relating directly to the functions of the transmission owner (costs relating to the system operator are not included),¹⁰ historical-cost accounting (HCA) depreciation and uncontrollable costs. The

⁹ Arthur Andersen (2001), ‘Report on Transco’s Operating Costs for the 2002/03 to 2006/07 Price Control Period: Final Report’, September.

¹⁰ NGC is both the transmission owner and system operator of the transmission system in England and Wales. The transmission owner is responsible for operating and maintaining the network’s assets, while the system operator is

uncontrollable costs include formula rates on the transmission system, transmission licence fees, and one-off and exceptional items.

The controllable OPEX category also includes some costs relating to renewals and maintenance. However, neither the price-control report for Transco nor for NGC provides a cost estimate for this category. Further discussions with NGC revealed that its reporting system is based on functions, and thus no overall estimate of renewals and maintenance could be provided at this time. As a result, the cost category of Materials and Sub-contractors (net of capitalisation and excluded services) could be used as a proxy, since the definition of this category is costs relating to planned and unplanned maintenance, maintenance schemes, research and development, technical services support, and tower painting. The size of this cost category is £37.8m, or 8% of the total OPEX figure used by Arthur Andersen.

Thus, the definition of the cost denominator for Network Rail used in this study is controllable and uncontrollable OPEX plus depreciation. Additional elements of renewals and maintenance have not been added to this definition, as Network Rail, similar to NGC, also has some maintenance costs within its definition of OPEX. (For example, there are some maintenance cost lines within Network Rail's zonal OPEX.)

Section 4 presents the findings of this analysis and details the external benchmarks applied.

For some processes, a comparison of performance and activity cost between zones or stations (ie, internal benchmarks) is the only viable source of information on the potential for efficiency improvements, and OXERA has used this method for the benchmarking between Major Stations.

2.4 Identifying appropriate comparators

The main benchmark categories that have been used here are as follows.

- *HQ departments*—with regard to external quantitative benchmarks, the most straightforward area on which to find information is HQ administrative functions for which there are widespread analogues (eg, Finance, HR and IT). A summary of the available benchmarks is given below (see section 4 for a detailed discussion).
 - *Finance*—the Australian National Audit Office has published a detailed finance-function benchmarking study, covering global companies. This permits benchmarking of cost and performance at a detailed activity level, although the benchmarks are not sector-specific.
 - *IT*—a high-level staffing benchmark has been identified. Although a greater level of detail may be desirable, Network Rail's own detailed IT benchmarking exercise suggests the same percentage cost reduction.

responsible for the transmission system, ensuring that generation and demand are matched (energy balancing) and maintaining the quality and security of supplies (system balancing).

- *HR*—a comprehensive benchmarking report has been identified. The executive summary provides benchmarks that are not sector-specific. The full report gives sector-specific benchmarks.
 - *Utility benchmarks*—a second category of processes concerns those with activities that are not widespread, but are nonetheless typical of utilities in the UK (eg, legal and regulatory activities). In these cases, OXERA has drawn upon benchmarking work undertaken in other UK utilities to provide evidence of the appropriate level of Network Rail’s costs.
- Furthermore, Arthur Andersen undertook an efficiency review of NGC, which is publicly available. The report contains efficiency comparisons, concentrated in the administrative area, which can be applied to Network Rail. Arthur Andersen produced a similar report for the efficiency study of Transco.
- *Cross-sector benchmarks*—a third category is processes with analogues in other industries (eg, property). In this area some previous benchmarking studies have been used.
 - *Internal benchmarks*—although the focus of this study has been external benchmarking outside the rail sector, this is not possible for rail-specific functions. For Major Stations, some internal benchmarking between the stations has been undertaken.

2.5 Determining overall operating cost efficiency

The final objective of the process benchmarking analysis is to estimate the efficient level of Network Rail’s OPEX. One of the limitations of the HQ benchmarking process is that, because several benchmarks are given in terms of the function’s size relative to the overall cost/employee base of Network Rail,¹¹ the results may show that the company is *relatively* efficient in terms of the size of its HQ compared with its total activity levels—ie, it has the correct mix of these activities, even if it is inefficient in an *absolute* sense. For this reason, the measured (in)efficiency of any single function will be affected by the (in)efficiency of other functions by their effect on total expenditure or headcount. The assessment of absolute efficiency—that is, the degree to which Network Rail is under- or oversized relative to UK rail transport output—cannot be determined through simple benchmarking ratios such as those presented in this paper. Much of this will be determined through the workstreams by other consultants. These assessments will then have knock-on effects on the efficient cost levels for the HQ functions.

¹¹ Which, in turn, is due to the overall cost/employee base representing the main cost driver for these functions.

3. Data Issues

This section presents the issues related to the development of appropriate performance benchmarks for Network Rail. In particular, it examines the main limitations of data sources used to compile the company's performance ratios and the remaining data gaps.

The main components of each Network Rail performance ratio are a numerator based on the costs or the headcount associated with a specified function or activity, and a denominator comprising total OPEX or total headcount.¹² OXERA attempted to compile a full suite of cost and headcount benchmarks for 2001/02, 2002/03 and 2003/04, but this has not proved to be possible owing to data limitations. Table 3.1 summarises existing data limitations, indicating where data is incomplete (marked with a cross).

Table 3.1: Network Rail data 'gaps'

Ratio type and data component	Data description	Availability				
		2001/02	2002/03	2003/04	2004/05	2005/06
Cost ratios						
Numerator	HQ-based costs by function	✓	✓	✓	✓	✓
	HQ 'outbased' costs by function	✓	✗	✓	✗	✗
Denominator	Total OPEX	✓	✓	✓	✓	✓
Headcount ratios						
Numerator	HQ-based headcount by function	✓	✓	✓	✓	✓
	HQ 'outbased' headcount by function	✗	✓	✓ ¹	✗	✗
Denominator	Total headcount	✗	✓	✗	✗	✗

Note: ¹Based on 2002/03 headcount.

The implications of Table 3.1 are that it has been possible to compile cost performance ratios for 2001/02 and 2003/04 only, and headcount performance ratios for 2002/03 only.

Network Rail has indicated that HQ 'outbased' cost and headcount figures are not available due to inter-zonal differences in organisational structure and the organisational changes over the period 2001/02 to 2003/04. In this time, business units have changed the allocation of departments' accountabilities and responsibilities, making it impossible to compare cost and headcount figures over time. Also, organisational differences in the zones imply that cost and headcount figures are not, in any case, comparable across zones.

¹² This does not apply to Major Stations, where internal benchmarks were used, or Property, where the denominator was total rental income.

4. External Benchmarking Analysis

This section summarises the findings of the benchmarking analysis completed on Network Rail's controllable OPEX, excluding certain zonal costs, compared with quantitative, external benchmarks from non-rail-specific sectors.

These benchmarks have been applied to broad commercial functions that are readily identifiable across sector boundaries (eg, Finance, HR, IT). These benchmarks are either cost ratios (functional costs/total operating costs) or staff ratios (number of staff in the function/total staff).

The definition of the cost denominator used to construct these benchmarks for Network Rail is controllable and uncontrollable operating costs including depreciation. However, there appears to be more uncertainty over the exact definition of the cost denominator (eg, in terms of the amount of maintenance costs included) than the total staff numbers (despite possible outsourcing issues). Thus, the focus has been to use the staff-related benchmarks.

Table 4.1 summarises the high-level process benchmarking findings.

Table 4.1: Summary of Network Rail's performance

Benchmark	External benchmark ¹	Network Rail performance ²		
		2001/02	2002/03	2003/04
IT				
Total staff:IT staff	55.6	n/a	51.2	n/a
IT cost: gross revenue	4.20%	3.70% ³	n/a	3.57% ³
HR ⁴				
Total staff:HR staff	134	n/a	67.2	n/a
HR cost:total cost	0.80%	0.82%	n/a	0.83%
Finance				
Total staff:Finance staff	44.6	n/a	51.1	n/a
Finance costs:total cost	0.63%	1.42%	n/a	1.60%
Corporate Affairs				
Total staff:Corporate Affairs staff	116	n/a	169.7	n/a
Corporate Affairs cost:total cost	0.97%	0.50%	n/a	0.43%
Legal				
Legal cost:total cost	0.06%	0.26%	n/a	0.13%
Corporate Planning & Regulatory Affairs				
Regulatory Affairs cost + Strategy & Business Development:total cost	0.29% (0.24% + 0.05%)	n/a	n/a	0.38%
Major Stations ⁵				
Station staff:station passenger area	—	—	—	—
Property ⁶				
Staff costs % rental income	3.4% ⁵			6.1%

Notes: ¹ Details of each external benchmark are provided in sections 4.1–4.7. ² Includes all known expenditure or staff for each function at HQ level and in the zones/regions. ³ Gross revenues are computed using total controllable OPEX and depreciation, assuming a zero margin. ⁴ The benchmarking covers Core HR only. ⁵ Not available—internal. ⁶ The benchmarking covers Spacia only.

Source: Network Rail accounts, Network Rail Business Plan (2003), META Group, Arthur Andersen, BNA Group, The Australian National Audit Office and OXERA analysis.

The first point to note about the results in Table 4.1 is that Network Rail's cost-based ratios appear broadly consistent between 2001/02 and 2003/04, with the exception of the Legal function, which has experienced a significant improvement in performance.

The second point is that, for functions whose primary cost driver is the total size of the business (in terms of costs or staff), efficiency in these areas may be overstated by inefficiencies in other functions. This is because inefficiency in other functions will inflate the total cost (or employee) base, making the original functions a smaller proportion of total costs/employees. Thus, the benchmarking may indicate relative efficiency, given the size of the cost/employee base, despite possible absolute inefficiency in the size of the cost/employee base.

Table 4.2 provides relative efficiency scores for each of these functions. For example, a headcount-based ratio is given in terms of total staff to functional staff. Efficiency in the

function would be indicated by a large number—ie, few staff relative to the total staff of the firm. Thus, the efficiency score is estimated by dividing Network Rail’s ratio by the external benchmark. (For a cost-based ratio, efficiency in the function would be indicated by a small number—ie, low costs relative to the total costs of the firm. Thus, the efficiency score is estimated by dividing the external benchmark by Network Rail’s ratio.) If this figure is less than 1 then Network Rail has relatively more staff (or higher costs) in this function for its total size compared with the benchmark, and is thus deemed to be inefficient in that function.

Table 4.2: Network Rail’s performance relative to available external benchmarks

Benchmark	Network Rail efficiency		
	2001/02	2002/03	2003/04
IT			
Total staff:IT staff	n/a	0.92	n/a
IT cost:gross revenue	1.14	n/a	1.18
HR			
Total staff:HR staff	n/a	0.50	n/a
HR cost:total cost	0.98	n/a	0.96
Finance			
Total staff:Finance staff	n/a	1.15	n/a
Finance costs:total cost	0.44	n/a	0.39
Corporate affairs			
Total staff:Corporate Affairs staff	n/a	1.46	n/a
Corporate Affairs cost:total cost	1.94	n/a	2.33
Legal			
Legal cost:total cost	0.23	n/a	0.46
Corporate Planning & Regulatory Affairs			
Regulatory Affairs cost + Strategy & Business Development:total cost	n/a	n/a	0.77
Major Stations			
Station staff:Station passenger area	n/a	n/a	0.80
Property			
Staff costs as % rental income	n/a	n/a	0.56

Notes: Values greater than 1 indicate relative outperformance (efficiency) compared with the benchmark by Network Rail; values less than 1 indicate greater *inefficiency* and *underperformance*.

Source: Network Rail accounts, Network Rail Business Plan (2003), META Group, Arthur Andersen, BNA Group, The Australian National Audit Office and OXERA analysis.

As discussed above, where several alternative benchmark definitions are available for each function, OXERA has focused on the ratios based on staff numbers, as the correct definition of total costs for the denominator is potentially more controversial. This assumes that outsourcing is not significantly different. This limits the use of cost-based ratios to Legal and CPRA, which total only 5% of the operating cost base that has been benchmarked.

A summary of the results is provided in Table 4.3, which applies the efficiency scores in Table 4.2 to the operating costs in each function in order to provide an estimated efficient

cost level (ie, column five—the estimated efficient cost level—is equal to column three multiplied by column 4). Overall, Network Rail is estimated to be around 17% inefficient in those functions examined (this figure falls to 16% if the median benchmark is used for HR).

An important consideration is the possibility of ‘cherry-picking’ the best performance on each individual function, and then setting an efficient cost target that may not be achievable in practice owing to inconsistencies in cost allocations. If this were deemed to be a significant problem, one approach to mitigate it would be to allow extra costs where Network Rail outperforms the external benchmark (eg, Finance and Corporate Affairs). OXERA considers that this is not such a significant issue in this instance, as the Finance and Corporate Affairs functions are fairly well defined and, in any case, there appears to be some doubt over the validity of the staff-based benchmark for the Finance function (see section 4.2). As such, for Finance and Corporate Affairs, the actual cost level is assumed to be efficient.

Table 4.3: Network Rail’s overall performance, 2003/04

Function/business units	OPEX (£’000s)	Inefficiency score	Efficient costs
RT Information Systems	60,297	0.92	55,569
HR ¹	14,086	0.50	7,060
Finance	27,494	1.00 ²	27,494
Corporate Affairs	7,038	1.00 ²	7,038
Legal and Secretariat	2,192	0.46	1,012
Corporate Planning and Regulatory Affairs ³	6,385	0.77	4,893
Major Stations	32,200	0.80	25,760
Property ⁴	16,538	0.56	9,261
Total benchmarked OPEX⁵	166,230		
Total efficient OPEX			138,087
Aggregate inefficiency			17%

Notes: ¹ The benchmarking covers Core HR only, not the entire HR function (the total HR function OPEX figure is £52,644). ² Finance costs and Corporate Affairs costs are estimated as being efficient. ³ Including Change Manager. ⁴ The benchmarking covers Spacia only, not the entire Property function (the total Property function OPEX figure is £29,740). ⁵ Excludes property costs outside Spacia and excludes HR corporate costs.

Source: Network Rail Business Plan (2003) and OXERA analysis.

In the analysis above, headcount-based ratios have been used where available. In order to check the sensitivity of the overall inefficiency estimate to the choice of the external benchmarks, an alternative approach using ‘the most appropriate benchmark’ was examined, thus:

- where it is clear what the main cost driver is (eg, HR is clearly driven by the number of staff), this determines the external benchmark ratio used;
- where both the total operating cost base and the number of employees are potential cost drivers, the average of Network Rail’s performance on the two

benchmarks was taken (eg, this was the approach adopted for IT, Finance and Corporate Affairs).

The impact of the above was to alter slightly the overall inefficiency estimate to 17%. However, it is notable that the Finance benchmark varies significantly according to whether a cost base or a headcount-based measure is used. The cost-based benchmark for Finance could be considered the more appropriate of the two. In addition, the HR external benchmark used is based only on median performance, whereas an upper quartile external benchmark would be more demanding and more appropriate. Using the average of the staff-based and cost-based benchmark for Finance alters the overall inefficiency estimate to 21%.

The following sections examine the separate functional benchmarks in more detail.

4.1 IT

Railtrack Information Systems (RTIS) benchmarks have been based on a leading IT benchmarking survey published by the META Group.¹³ This international survey, with considerable representation by US companies, covers all economic sectors. Table 4.4 indicates the main average benchmarks provided in this survey. It should be noted that only average figures were available to OXERA.

Table 4.4: META Group IT process benchmarks compared against Network Rail

Parameter	Cross-sector average	Transportation average	Network Rail
Total staff:IT staff	27.8	55.6	51.2 ¹
IT spend as % revenue	3.6	4.2	3.57 ²

Notes: ¹ For 2002/03. ² For 2003/04.

Source: META Group and OXERA analysis.

Given the wide variation in IT expenditure between sectors, the transportation sector benchmark has been assumed to be the most appropriate benchmark for RTIS.

The main limitation of IT benchmarks is the large potential for technological differences between companies to prevent meaningful comparisons at the detailed sub-process level (eg, development, maintenance). Therefore, highly detailed benchmarking of IT functions is unlikely to yield useful results. Nonetheless, quantitative comparison of cost drivers could be useful for management purposes at the enterprise level—for example:

- the proportion of the software portfolio that is package software;
- outsourcing practices;
- programmer productivity;
- distribution of effort across the software life cycle;
- use of tools and techniques.

¹³ META Group (2003), '2003 Worldwide IT Benchmark Report'.

The benchmarking of IT activity may also need to recognise specific factors that differentiate Network Rail's IT function from that of other companies. Network Rail has stated that its Information Management support costs are driven by:

- the number of different legacy applications in use (in excess of 1,000);
- the variety of operating environments;
- the geographical spread of users;
- the service levels required (as there are many business-critical systems).

The first two points are, to some extent, endogenous factors caused by previous management decisions. The aim of this study, and Network Rail's own IT benchmarking analysis, is to identify an efficient cost level that can be achieved going forward, regardless of any reasons for the current inefficiencies (although this may have a bearing on the speed with which cost improvements can be achieved). It is unclear whether the third and fourth points will have a significant impact on the comparisons, given that the external benchmarks are based on benchmarks from the transport sector.

Furthermore, Network Rail has provided some background information on its IT function. Shortly after Network Rail took over the business, SchlumbergerSema was appointed as Information Management Partner in order to bring Network Rail's Information Management up to a 'best in world' class. A transition team is reviewing all the processes and procedures within the Network Rail Information Management department and how they compare with the industry. Functional benchmarking is therefore a key element of Network Rail's Information Management strategy. In particular, benchmarking is being used for:

- forecasting long-term Information Management expenditure for the ten-year Business Plan; and
- identifying and facilitating specific efficiency improvements in the short term.

Thus, Network Rail is itself using similar approaches adopted by OXERA in this study, albeit at a far greater level of detail. In particular, the March 2003 Business Plan expenditure projections on Information Management (OPEX and CAPEX) in the long term have been set as a percentage of the total Network Rail cost base. This percentage level, 3% in the long term, is an industry norm that is published by Gartner, a leading international consultancy.

The OPEX component of the plan has been built 'bottom up', with the expenditure forecast in 2003/04 being based on:

- the 2002/03 target cost base, less 15% efficiency savings; plus
- provision for the one-off costs of in-sourcing the Unisys desktop support contract (2003/04 only) and the cost of the SchlumbergerSema Information Management Partner (up to 2007/08); plus
- extra support costs associated with key Information Management implementations and to reflect targeted year-on-year efficiency savings on external contracts.

In the longer term, year-on-year efficiency savings have been assumed to be 2%.

In order to achieve the 15% efficiency savings assumed in the 2003/04 budget, Network Rail Information Management has undertaken a number of initiatives, including.

- most significantly, the use of benchmarking (based on reports commissioned from Gartner) as a lever in order to negotiate price reductions on some of Network Rail's key supplier contracts;
- terminating contracts where suppliers have not been delivering satisfactorily;
- ongoing discussions with all existing suppliers to review the current service levels, and how the suppliers can help Network Rail reduce OPEX for 2003/04;
- converting from a largely contractor-resourced organisation to one resourced by permanent staff.

Overall, the cost reduction suggested by OXERA's high-level external benchmark appears to be in line with Network Rail's own Business Plan projections (ie, they both suggest an 8% cost reduction). The initiatives undertaken by Network Rail also seem commendable, as does its focus on functional benchmarking to improve efficiency. As such, OXERA does not propose to alter the results of the process benchmarking of IT.

4.2 HR

OXERA has used a survey from the BNA Group that cites the following statistics (see Table 4.5).

Table 4.5: BNA Group HR process benchmarks compared against Network Rail

Parameter	Median, 2001	Median, 2002	Network Rail ¹
Total staff: HR staff	100	111	67.2 ²
HR cost as % total	1.0	0.8	0.83 ³

Notes: ¹ Network Rail's figures relate to Core HR only. ² For 2002/03. ³ For 2003/04.

Source: BNA Group (2002), 'HR Department Benchmarks and Analysis 2002', and OXERA analysis.

It should be noted that only median figures were available to OXERA. To benchmark in greater detail would be straightforward, either with reference to the BNA report or by using an alternative report published by EP-First,¹⁴ which draws on data from 5,000 European organisations and includes over 100 HR parameters. These parameters are available and many address specific issues of cost effectiveness in HR.¹⁵

The table below details some other benchmarks also available for the HR function, including the upper quartile. Both studies seem to provide consistent benchmarks. The use of an upper-quartile benchmark is more appropriate than a median benchmark when establishing an efficient cost level. The figure used in this study is the 134 upper-quartile UK utility benchmark provided in the table below, although sensitivity analysis is also provided to show the impact of using the 111 median benchmark of Table 4.5.

¹⁴ EP-First (2003), 'European HR Index Effectiveness Report 2002/2003'.

¹⁵ See Annex 1 in EP-First (2003).

Table 4.6: Total employees to HR staff

Source	Benchmark
BNA Group median	111
EP–Saratoga UK utility upper quartile	134
EP–Saratoga UK utility median	117
EP–Saratoga UK upper quartile	144
EP–Saratoga UK median	95

Source: BNA Group and Arthur Andersen.

Network Rail has provided comments on the comparison of HR, and has highlighted certain issues that may affect the comparisons. It has pointed out that HR departments can have additional value-added functions, including:

- staff development and training;
- organisational design;
- culture change.

The first point may be an issue that warrants further discussion. Although OXERA has quoted the Saratoga-based HR benchmarks used by Arthur Andersen for Transco in Table 4.6, when benchmarking NGC using the same source for the external benchmarks Arthur Andersen excluded training and development, trainees, and occupational health and safety. However, Network Rail’s training costs represent only around 2% of the total HR costs. As such, this does not appear to be a significant factor.

On the second and third points, some of these value-added services appear to be incorporated in the external benchmarks used by Arthur Andersen to benchmark Transco, as the activities performed within Transco’s HR include:

- developing, implementing and monitoring HR strategies that support Transco’s business goals;
- the maintenance of employee records, organisational design and support for disciplinary processes;
- the design and management of a group-wide compensation and benefits policy;
- a portfolio of share-based incentive schemes; and
- the coordination of senior-management development and succession.

Network Rail has also stated that HR departments may face different operational environments:

- the geographical spread of staff—this issue has not in general affected HR performance in such benchmarking studies. Indeed, the more stringent benchmarks were used for NGC and Transco, both of which are national companies, with geographically widespread operations;
- the extent to which new ‘self-service’ approaches to HR have been introduced (for example, Network Rail is implementing the Oracle HR suite that will allow managers and staff direct access to relevant HR information). This appears to be an endogenous management decision—if Network Rail believes that this is the most cost-effective HR strategy available to the company, it should help achieve the HR benchmarks;

- the maturity of the organisation in managing staff issues. Again, this is an endogenous management issue and is also more a matter of how quickly costs can be reduced, rather than of what the correct efficient cost level is.

The full BNA report might assist in answering these questions more directly. Although, in general, with the exception of training, the issues may not be significant, especially given that more stringent upper-quartile benchmarks have been used for other utility companies.

While these benchmarks may appear appropriate, the speed at which they can be caught up with requires further investigation. Network Rail has stated that, although significant improvements in its HR efficiency may be achievable over a period of years, the company will need to strengthen this area in order to facilitate cost savings elsewhere in the organisation.

Network Rail has also made the point that there is a substantial change management task ahead and this will make demands on the HR function. While this is true, it will cause a transient effect and the purpose of this work is to identify the steady state efficiency levels.

However, there is a critical issue with respect to the way that Network Rail allocates costs *and* staff to HR that warrants further consideration. For HR, Network Rail reports two separate cost and staff lines, 'Core' and 'Corporate'. The 'Corporate' cost and staff element includes:

- executive salaries and executive staff numbers;
- graduate trainee salaries and the number of graduate trainees;
- payments to the Association of Train Operating Companies in respect of staff rail travel facilities (around £5.2m per year);
- all staff performance bonus schemes.

This has several implications. First, the estimated HR inefficiency is not relevant to corporate HR cost element. As such, the headcount benchmarks are only applied to the 'Core' element of HR costs (around £14m of the £52.6m total HR costs).

In addition, the HR headcount ratio calculation for Network Rail is based only on the Core HR element, and thus excludes the Corporate element. The 2003/04 HR headcount projection for Corporate HR is 118 employees (100 in 2002/03) and consists of 48 executives (HQ and regional executives, non-executive directors and some functional heads/their first line reports) and 70 graduate trainees.

However, the potential inefficiency within this cost element should be considered as these costs and staff have not been included when calculating Network Rail's ratio performance (the denominator is fixed at Network Rail's relevant total, but the numerator will have been underestimated by the element of costs/staff allocated into HR Corporate).

Ideally, this would involve allocating these costs and staff across the appropriate functions. However, these costs are accounted for centrally under the Corporate business unit and data on how these costs and staff might be allocated to functions is not readily available, and a number of the executive grades (eg, the non-executive directors) do not have a functional 'home'. Instead, an assumption might be used—for example, for several

of the key functions the approach might be to allow for the approximate cost of a director or ‘head of’ in the function cost to which the relevant benchmark is applied.

Another possible approach would be to apply the ‘aggregate inefficiency’ score for the other activities to the Corporate HR function cost.

In this study, neither approach has been adopted. Instead, it should be recognised that the bottom of the range of Network Rail’s estimated inefficiency potentially represents a lower-bound estimate as the inefficiencies in other functions have been underestimated (and similarly, the efficiencies overestimated).

4.3 Finance

The Australian National Audit Office has published a detailed finance-function benchmarking exercise for global companies. The main Finance benchmarks are shown in Table 4.7.

Table 4.7: Australian National Audit Office Finance process benchmarks compared against Network Rail

Parameter	75th percentile	Median	Network Rail
Total staff: Finance staff	44.6	27.6	51.1 ¹
Finance cost as % total	0.63	1.1	1.60 ²

Notes: ¹ For 2002/03. ² For 2003/04.

Source: Australian National Audit Office (2000), ‘Benchmarking the Finance Function’, and OXERA analysis.

This public-domain information may provide a useful benchmark for Network Rail’s Finance function. In Tables 4.1 and 4.2, the upper-quartile figures have been used to benchmark the company’s performance.

However, it is notable that the Finance benchmark varies significantly according to whether a cost- or a headcount-based measure is used—Network Rail appears significantly inefficient on the former and efficient on the latter. The cost-based benchmark for Finance could be considered the more appropriate of the two, as costs should represent the more appropriate cost driver (although employees will also be a driver).

4.4 Other Corporate functions

When Arthur Andersen reviewed NGC for its price review, its expenditure on Corporate functions received little attention. However, during its review of Transco, Arthur Andersen took the view that Transco’s Corporate functions were too costly, and justified this view with reference to NGC and third-party benchmarks.

As a result of the comparison with NGC, a suite of corporate benchmarks is now in the public domain, covering Corporate affairs, Legal, Regulatory and Strategic functions. The benchmarks are summarised in Tables 4.8 and 4.9.

Table 4.8: Arthur Andersen corporate functions process benchmarks compared against Network Rail

	Cost as % total operating costs	Network Rail ¹
Corporate Affairs	0.97	0.43
Legal	0.06	0.13
Regulatory	0.24	n/a
Strategy & Business Development	0.05	n/a
Strategy & Business Development and Regulatory	0.29	0.38

Note: ¹ For 2003/04.

Source: Arthur Andersen and OXERA analysis.

Table 4.9: Arthur Andersen corporate functions process benchmarks compared against Network Rail

	Total staff: functional staff	Network Rail ¹
Corporate Affairs	116	169.7

Note: ¹ For 2002/03.

Source: Arthur Andersen and OXERA analysis.

Network Rail's Business Development function is not equivalent to that considered in the Arthur Andersen report; rather, this function is undertaken within Network Rail's CPRA function. The six key areas of the CPRA directorate are:

- business planning;
- regulatory finance, including the core economics capability;
- business measurement;
- interim review and longer-term strategic planning;
- European affairs; and
- regulatory reporting, compliance and education.

The two separate benchmarks, Regulatory and Strategy & Business Development, have therefore been combined to provide a benchmark comparable to this function.

While more robust benchmarks may be derived using third-party sources, the advantage of the NGC benchmarks for Network Rail's corporate operating costs is their relevance to a UK utility with public safety and service obligations.

4.4.1 Corporate Planning and Regulatory Affairs

While it has not been possible to discuss the details of these comparisons, Network Rail has provided some comments on the comparison of regulatory affairs, and has highlighted some issues that may affect the comparisons.

- The Directorate has recently been restructured and strengthened to manage the delivery of obligations to both the ORR and the SRA. (While some issues are managed on a tripartite basis, this is not always possible).

- Network Rail considers the scale of activity emerging from the Rail Regulator to be high. With regard to its Interim Review, the benchmarking of Transco and NGC was also undertaken during their respective reviews, so should provide some level of comparability. However, Network Rail has also noted the ongoing emphasis on licence-condition compliance, which it states is more intense than in other industries, largely because of past failures and the need for substantial change. Current issues include temporary speed restrictions; performance; the asset register; access agreements; and model clauses.
- Network Rail considers the level of non-controllable operating costs to be high. However, licence fees are not included in the benchmark comparisons (they are excluded from the external benchmark costs and from Network Rail's, as they are part of Network Rail's uncontrollable costs under 'joint industry costs'). However, the cost of Reporters comes under the CPRA budget, and Network Rail states that it has little control over these costs, as the remits, timing and resource deployment are agreed between the ORR and the Reporters.

Overall, the cost reduction suggested by OXERA's high-level external benchmark is around 23%, while Network Rail's own Business Plan projections suggest a reduction of 15%.

4.5 Technical

The Technical functions comprise the Directorate, the Chief Engineer, Asset Delivery, Supply Chain and Railway Systems. OXERA's brief was to identify process benchmarks drawn from outside the railway industry. However, the Technical functions posed particular difficulties because many Technical functions are unique to the railway industry. Notwithstanding this, OXERA was asked to develop a process benchmarking approach for the Technical functions.

OXERA undertook a benchmarking survey of network utility companies. The first phase of the survey was intended to obtain general background information on the Technical function of the network companies, in order to identify the applicability of the approach and to assist in developing a second-phase survey to obtain detailed benchmarking. However, based on the evidence collated, it became clear that the prime functions of a technical department—namely, technical standards, asset procurement and asset management—were organised very differently between companies. The result was that it was not possible to construct a common activity dictionary, at least without significant effort by all participants.

A further attempt was made to compare performance with the Ministry of Defence's Procurement Executive and Defence Logistics Organisation. While the functions have some similarity with Network Rail's Technical function, they may not represent best practice.

In addition, Network Rail has stated that major drivers of higher costs are increases in the volumes of engineering activity and safety and environmental issues. It states that the former is being undertaken through the Projects and Engineering Directorate, as the company has sought to re-establish engineering control of the network following the Ladbroke Grove collision and the Hatfield derailment, and to respond to recommendations from inquiries. This has required additional staff recruitment to support

a range of activities, together with associated expert consultancy support, research projects, IT support, and other costs. Some of these activities were new to the company or have been significantly expanded, and all are aimed at improving safety and the quality and efficiency of maintenance and renewal work. Therefore, the main issue in the Technical function appears to be determining the appropriate level of work on quality and safety matters, as opposed to the efficiency with which it is undertaken.

4.6 Major Stations

The focus of OXERA's process benchmarking has been to identify benchmarks external to the rail industry as far as possible. Following discussions, research was undertaken to examine the relevance of airport passenger terminals to the benchmarking of Network Rail's Major Stations. The main findings were that:

- the processes of airports differ from major railway stations to a degree that prevents direct comparison without the construction of detailed process models;
- the cost drivers and principles of productivity measurement (eg, passengers per employee) that apply to airports do appear to be applicable to stations.

A different approach was adopted for Major Stations compared with that of the other functions examined in this study. Instead of comparing with external benchmarks, Network Rail's Major Stations were compared with each other. Any gaps in productivity between Major Stations would merit attention because basic productivity between airports appears to be comparable, and therefore a similar occurrence in Major Stations would be expected.

In contrast to other forms of benchmarking undertaken in this report, the internal benchmarking only identifies best practice within the company and not world best practice. Thus, potential cost reductions may be even greater than those suggested below.

A comparison of Major Stations data provided by Network Rail illustrates that:

- headcount and costs do not appear to be significantly driven by passenger numbers;
- headcount and costs appear to be significantly affected by passenger area¹⁶ (the correlations are 0.7 and 0.6 respectively). Passenger area could proxy the number of platforms, and thus the required level of station management, dispatch and communications, required cleaning and maintenance levels, and required security levels;
- there are significant variations in headcount and productivity measures between the Major Stations.

Given the last point, two approaches were considered:

- productivity performance at each station was compared;
- regression modelling was undertaken.

Both approaches were examined to identify whether cost savings could be achieved if the performance of the better-performing Major Stations was applied across the stations.

¹⁶ Passenger area is defined as the station concourse and platforms.

Clearly, a number of factors affect the productivity performance of the Major Stations, not least the type of station (eg, whether it is a commuter or an intercity station). However, the small dataset (of the 15 stations, 14 represented data over a complete year and one of these did not have data on passenger area) did not enable multiple cost drivers to be considered simultaneously, but only the most significant factor. Careful interpretation of the results is therefore required.

‘Frontier’ performance on an individual productivity measure has therefore not been used to represent the benchmark. There are a number of stations that appear to be outliers on the values of the cost drivers and the performance measures. For example, at some stations, train operating companies (TOCs) prefer Network Rail to subcontract services such as announcing, disabled assistance and security to them—Fenchurch Street is a notable example: Network Rail has only one duty manager per shift; all other tasks are carried out by TOC staff. Thus, Fenchurch Street is not used to provide a benchmark for the remaining stations; instead, the approach adopted has been to:

- consider the performance of the third-best station as a benchmark for the remaining stations; or
- use two separate frontiers—one based on the performance of the second-best London or commuter station, and the other based on the performance of the second-best non-London or intercity station.

Table 4.10 summarises the productivity performance of each Major Station, and shows that there is significant variation in performance across the stations.

Table 4.10: Productivity performance across Major Stations

	Headcount	Passengers/headcount	Passenger area/headcount	Retail area/headcount
Birmingham	36	882	762	42
Glasgow Central	31	1,114	832	94
Edinburgh Waverley	27	532	2,107	142
Leeds	32	724	1,272	102
Manchester Piccadilly	48	542	958	96
Euston	48	1,073	1,192	83
Kings Cross	42	968	730	48
Liverpool Street	37	3,345	n/a	280
Waterloo	36	2,046	1,387	140
Paddington	40	693	1,500	120
Victoria	37	2,989	1,398	251
Charing Cross	18	2,091	796	87
London Bridge	27	1,577	1,100	98
Fenchurch Street	5	2,500	1,817	211
Cannon Street	5	n/a	n/a	186
Average	31	1,505	1,219	132
Maximum	48	3,345	2,107	280

Source: OXERA analysis.

On the basis of a passenger per employee productivity:

- there is a clear split in performance between intercity and commuter stations;
- compared with the second-best performer within each sub-group (intercity or commuter stations), an overall improvement of 22% could be achieved if the performance of the better stations was transferred to the other stations of the same type.

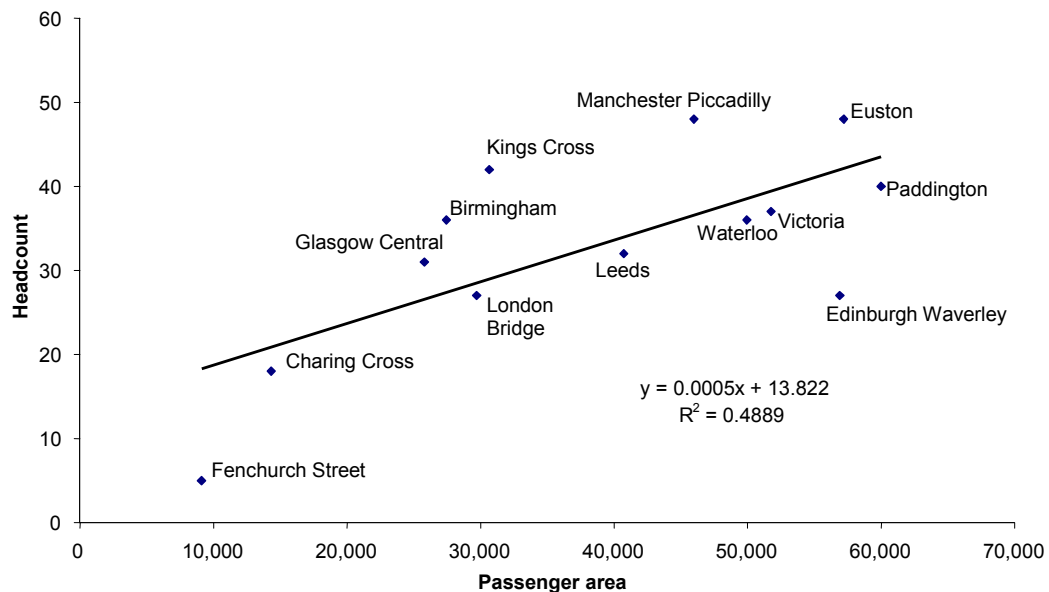
On the basis of a passenger area per employee productivity:

- there is not such a clear split in performance between intercity and commuter stations;
- compared with the third-best performer, a 25% improvement could be achieved;
- compared with the second-best performer within each sub-group (intercity or commuter stations), an overall improvement of 21% could be achieved if the performance of the better stations was transferred to the other stations.

On the basis of unit cost measures, a similar pattern emerges. Overall, this seems to suggest that an improvement of 20% could be achieved if the productivity or cost performance of the better stations was transferred to the other stations.

Using a regression model, some element of fixed costs or minimum required staff level can also be taken into account. On this basis, an overall improvement of 19–21% (for a linear and a log-linear model) could be achieved, or 26–27% on a cost basis (for a linear and a log-linear model).¹⁷

Figure 4.1: Headcount against passenger area



Source: OXERA analysis.

¹⁷ The models have R^2 of 0.489 (or 0.642 if the outlier Edinburgh Waverley is excluded) and 0.692 respectively (or 0.768 if the outlier Edinburgh Waverley is excluded).

In general, the stations above the line are all major intercity stations. Network Rail has stated that such stations have a considerably higher level of longer-distance traffic, more luggage and more passengers requiring assistance compared with the London commuter stations. One way to model this observation is to use two separate frontiers for each type of station.

- One frontier for London stations and another for non-London stations—an overall improvement of 16–19% could be achieved, or 21–25% on a cost basis (for a linear and a log-linear model).
- One frontier for intercity stations and another for commuter stations—an overall improvement of 15–20% could be achieved or 20–25% on a cost basis (for a linear and a log-linear model).

Network Rail has also stated that staffing levels and associated costs are largely driven by their TOC customers, and that some TOCs require a higher level of customer service than others. Network Rail states that it justifies every employee to the TOCs and that the bulk of the costs are then passed through to the TOCs (as Qualifying Expenditure) under Station Access Agreements. However, it would appear that a similar argument could be made by the airport operators with respect to the airlines. The question is whether this is truly exogenous due to factors such as strict health and safety or security legislation, or whether some TOCs are simply getting better value for money than others. This issue is currently considered to be endogenous and thus not necessarily a factor that needs to be explicitly taken into account in the comparisons. Another matter is the impact on single-till revenue. Both of these issues will require further consideration by the ORR.

Assuming the caveats identified above hold, it would appear that the operating costs in Major Stations could be reduced by around 20%. However, detailed discussions with Network Rail have not been undertaken to examine further the possible reasons (other than inefficiency) for these gaps.

4.7 Property

This section outlines the approach to be adopted for the benchmarking of Network Rail's Property portfolio.

4.7.1 Nature of portfolio

Network Rail has remarked that the main characteristic of its Property portfolio is its poor quality, in terms of asset value per property, potential rental value, and the reliability of its tenants, and that these factors lead to increased administration costs.

There is one manager of commercial property that has a similar profile, namely local authorities. In 2000, the Audit Commission examined local authorities in England and Wales and found a diversity of performance.¹⁸ Of particular interest is the 'non-operational' property—ie, that which is not linked to the operations of the authority. This has an asset value of £10.3 billion. Excluding property under construction (worth £2 billion) and property being prepared for sale (worth £0.7 billion), the remainder, valued at £7.6 billion, comprises:

¹⁸ Audit Commission (2000), 'Hot Property: Getting the Best from Local Authority Assets', April 6th.

- commercial or industrial property;
- vacant land held for future use.

This has been described in the Audit Commission report as ‘a rag bag of properties acquired over many moons for a variety of purposes’. It would therefore seem to match Network Rail’s perception of its own portfolio.

4.7.2 Choice of benchmark

Having identified a comparative portfolio, the next stage is to find a source of benchmarks. The National Best Value Benchmarking Scheme was identified. The scheme was set up by the Property Societies in Local Government in 1997 because benchmarking for property services did not exist in a form that was suitable for local authorities. In November 1997, the benchmarking model was formulated for the Society of Chief Quantity Surveyors in Local Government, in conjunction with the Chartered Institute of Public Finance and Accountancy, the Federation of Property Societies and the Society of Chief Architects in Local Authorities. The questionnaire was sent out to a number of volunteer authorities, external auditors and the Audit Commission. All of these bodies consider the scheme to provide the level of information appropriate to identify areas of improvement, development and best practice, consistent with the government’s approach to best value. Over the past two years the number of subscribers has grown considerably and there are now over 140 authorities within the scheme.

The module of interest is Estates and Property Management, which was developed in conjunction with the Association of Chief Estates Surveyors and Property Managers in Local Government (ACES) and the Association of Chief Corporate Property Officers in Local Government (COPROP). It covers a wide range of indicators related to property management—of particular interest are those covering commercial management.

In the commercial management area, sample indicators include:

- staff costs as a percentage of rental income;
- rent arrears as a percentage of rental income;
- the percentage of reviews served on time;
- annual rent as a percentage of the asset value of estate;
- income lost from voids as a percentage of potential annual rents;
- the percentage of new voids re-let within six months.

Other indicators may be available.

4.7.3 Results

Table 4.11 summarises the results of the benchmarking analysis. It should be noted that Network Rail’s Property figures only relate to Spacia, which manages the commercial property portfolio.

Table 4.11: National Best Value Benchmarking Scheme Property process benchmarks compared against Network Rail

	Median	Average	Upper quartile	Network Rail ¹
Staff costs % rental income	5.4	9.4	3.4	6.1
No. of properties per staff member	141	125		n/a
Average staff costs per property (£)	240	320		n/a
Rent arrears as % of rental income	11.5	18		6.6
Current arrears as % of income	8.0	8.9		n/a
Former tenants arrears as % of total debt	23.5	18.3		n/a
% of review notices served on time	100	93.7		n/a
% of review/renewals agreed within six months	56.5	56.5		n/a
Time from assignment application to issue of consent				
0–3 months	61	61		n/a
3–6 months	17	17		n/a
6+ months	30.5	30.5		n/a

Note: ¹ Relates only to Spacia, which manages the commercial property portfolio.

Source: National Best Value Benchmarking Scheme.

The staff cost as a proportion of income has been used as a proxy for efficiency, as this relates input to output directly (most other measures—eg, arrears or timely reviews—deal with service performance or cash collection rather than efficiency).

Network Rail has queried the comparison of its property portfolio with that of local authorities. Its view is that the authority database could be divided into metropolitan and county datasets, for comparison with its core and outbased portfolios respectively—this has merit and could be considered later. Network Rail has made other comments on the validity of the comparisons—for example, that the operational requirements of railways make unique demands on property (though the cost implications of these are uncertain) and that some local authority property has no counterpart in Network Rail. On the latter point, only the ‘non-operational property’ of the local authorities, which is let on a commercial basis, forms the basis for the comparison. As such, OXERA considers that this portfolio provides an adequate source of comparison.

4.8 Trends in expenditure and other functional areas not already benchmarked

Table 4.12 summarises Network Rail's March 2003 Business Plan.

Table 4.12: Trends in functional costs excluding 'outbased' expenditure (£'000s)

Function/business unit	2003/04	2004/05	2005/06	Change, %
Business Development	3,378	2,692	3,792	12
Freight	2,200	2,180	2,180	-1
Major Stations	32,200	31,925	31,804	-1
National Logistics Unit	-13,380	-20,308	-22,614	69
Operations	5,101	4,127	3,779	-26
PLC Adjustments	186,904	214,626	223,708	20
Property	29,740	30,355	32,410	9
RT Information Systems	60,297	56,229	55,693	-8
Safety	84,600	80,660	79,450	-6
Technical (Engineering)	114,738	88,368	73,381	-36
West Coast Route Modernisation (WCRM)	4,129	13,893	24,510	494
Total central business units	509,907	504,747	508,093	0
Change Manager	513	389	300	-42
Corporate Affairs	7,038	7,099	7,161	2
Finance	7,829	7,829	7,861	4
HR	51,797	51,473	51,069	-1
Legal & Inquiry	1,576	1,594	1,525	-3
Regulation & Government	5,872	5,008	4,998	-15
Secretariat	616	619	582	-6
Total HQ service functions	75,241	74,011	73,496	-2
Total	585,148	578,758	581,589	-1
Total (excluding Safety, PLC Adjustments and WCRM)	309,515	269,579	253,921	-18

Source: Network Rail Business Plan (2003).

The overall planned reduction in OPEX by Network Rail is similar to that assessed in this study using the external benchmarks. However, the split between functions is very different. In particular, the following are of interest (and may warrant further examination).

- Areas not externally benchmarked in this study:
 - the National Logistics Unit, which is a revenue element rather than a cost line, is projected to increase by 69%;
 - Operations is budgeted to fall by 26%;
 - Freight is budgeted to remain stable—this generally appears to have been the case in recent years;
 - PLC Adjustments is projected to increase by 20%;
 - Safety is projected to fall by 6%;
 - Technical is projected to fall by 36%

- WCRM is projected to increase significantly.
- Areas benchmarked in this study:
 - the total Property function (including non-Spacia) is budgeted to rise by 9%, compared with an estimation that Spacia costs could fall by 44% according to external benchmarks;
 - IT is budgeted to fall to the same extent as suggested by the external benchmarking (ie, by 8%);
 - Total HR is budgeted to fall slightly (1%) compared with a 39% reduction in Core HR according to external median benchmarks, and 50% reduction in Core HR according to external upper-quartile benchmarks. This large disparity is likely to be driven by Network Rail's view that a large HR department is required while the company undergoes significant organisational restructuring (see section 4.2);
 - Finance is budgeted to increase by 4% compared with an assessment that this function was efficient according to external headcount-based benchmarks. However, the cost-based external benchmark suggested a 60% reduction;
 - Corporate Affairs is budgeted to rise slightly (2%) compared with an estimation that these costs are efficient according to external benchmarks;
 - Legal is budgeted to fall by 3% and Secretariat by 6%, compared with a combined 54% reduction according to external benchmarks;
 - CPRA is budgeted to fall by 15% compared with a 23% reduction according to external benchmarks;
 - Major Stations is budgeted to fall by only 1% compared with a 20% reduction suggested by benchmarks between the stations.

4.9 Overall efficiency

Aggregating the separate functional results suggests that, overall, Network Rail may be inefficient by around 16–21%, although the bottom of this range potentially underestimates Network Rail's inefficiency (refer to section 4.2). In addition, inefficiency in Network Rail's total cost or staff base has not been considered, this is examined in the next section.

However, the analysis in this paper has not involved full discussions with Network Rail on possible reasons for any differences in the comparisons, although some comments are included. It should therefore be understood that further discussion would be required to gain a more complete understanding of the potential for Network Rail to reduce its costs.

5. Inefficiency of the Cost Base

As discussed in section 2.5, to some extent the external benchmarking analysis does not necessarily demonstrate absolute efficiency of the overall business, as most benchmarks relate to the ratio of the number of employees (or costs) relative to the overall number of employees (or total costs). Thus, efficiency may be overstated because inefficiency in some areas (including those not examined in this report, such as zonal OPEX) will inflate total employee numbers and total costs, making the functions smaller as a share of total costs.

Thus, a crucial input into this analysis is an assessment of the overall efficient cost level of Network Rail.

The ORR has informed OXERA that other workstreams have indicated that Network Rail is around 12–20% inefficient in zonal OPEX. If it is assumed that Network Rail is 15% inefficient in zonal OPEX (ie, slightly below the average of this range), a revised denominator can be constructed and the benchmarking undertaken in section 4 repeated. Instead of an overall inefficiency estimate of 16%–17%, Network Rail is assessed as being inefficient by 18%.

In the analysis above, headcount-based ratios have been used where available. In order to check the sensitivity of the overall inefficiency estimate to the choice of the external benchmarks, some sensitivity analysis was undertaken. An alternative approach used the average of the cost-based and staff-based benchmark for Finance (see section 4.3). Using this benchmark alters the overall inefficiency estimate from 18% to 23%.

6. Conclusion

The aims of this paper have been to examine Network Rail's HQ controllable operating cost base—in particular, to assess Network Rail's March 2003 Business Plan and to identify the cost savings it might achieve going forward if it adopts best practice from other industries.

External quantitative benchmarks have been obtained or identified for several major categories of Network Rail's HQ expenditure. Similarly, some internal benchmarks have also been developed. Overall, Network Rail seems to be between 16% and 23% inefficient. However, it should be recognised that the bottom of this range potentially underestimates Network Rail's inefficiency as the inefficiencies in other functions have been underestimated due to staff and costs within Corporate HR not being reallocated to their appropriate functions. In addition, the bottom of this range is based on a median benchmark for HR and does not take into account the potential inefficiency in the total cost or staff base. Similarly, the upper end of this range probably overestimates Network Rail's inefficiency, as it is dependent on using the cost-based benchmark for the Finance function. As such, OXERA considers that a more central estimate of Network Rail's inefficiency in those areas examined in this report ranges from 18% to 20%.

At the functional level, it appears to be:

- inefficient in six functions (IT, HR, Legal, Corporate Planning and Regulatory Affairs, Property and Major Stations);
- efficient in one function (Corporate Affairs).

For the remaining function (Finance), the picture is unclear. On a staff-based external benchmark, Network Rail appears efficient. However, in stark contrast, the use of a cost-based benchmark, which may be more appropriate, suggests 60% inefficiency in this function.

Another finding from the external benchmarking analysis is the difficulty of demonstrating absolute efficiency. When comparing the relative sizes of functions (either by proportion of total cost or in terms of headcount), inefficiencies in other functions will inflate the total number of staff and total cost base which, in turn, will tend to overstate the efficiency elsewhere.

The ORR has informed OXERA that Network Rail has been assessed as being 12–20% inefficient in zonal OPEX. If Network Rail were to achieve a 15% cost reduction in this area (ie, slightly below the average of this range), its overall operating cost base would fall by around 4%. This reduction would affect its performance on the functional ratios considered above. Taking this into account would suggest that Network Rail could be around 18% inefficient.

In the analysis, headcount-based ratios have been used where available. In order to check the sensitivity of the overall inefficiency estimate to the choice of the external benchmarks, an alternative approach using the average of the cost-based and staff-based benchmark for Finance (see section 4.3) could be taken. Using this benchmark alters the overall inefficiency estimate from 18% to 23%.

The next stage will necessitate in-depth discussions with Network Rail, the ORR and the SRA in order to:

- develop a greater understanding of the gaps in the benchmarking analysis and potential reasons for those gaps;
- examine the achievability and timeframe for these suggested cost reductions (using, for example, qualitative benchmarks). To determine the rate of improvement that can be achieved requires an understanding of the reasons for a performance gap, in order for a view to be taken on the necessary changes to be made.